

REMARKS/ARGUMENTS

The amendments set out above and the following remarks are believed responsive to the points raised by the Office Action dated January 24, 2011. In view of these amendments and remarks, reconsideration is respectfully requested.

The Pending Claims

Claims 2-6, 8-29, 36-48, 50, 51, 64-98, and 101 have been canceled, and new claim 105 has been added. After entry of the amendment, claims 1, 7, 30-35, 49, 52-63, 99, 100, and 102-105 are pending, of which claims 7, 32-35, 49, 55, 56, 58-63, and 104 have been withdrawn in response to a restriction requirement. Claims 1, 7, 30, 34, 49, 52, and 102-104 have been amended, and claim 105 has been added, to describe the invention more clearly. No new matter has been added, and the basis for the amended claim language may be found in the original specification, claims, and drawings.

New claim 105 is supported at, for example, paragraph [0025]. Entry of the above is respectfully requested.

The Office Action

For convenience, the following remarks will address the objections and rejections in the same order they were raised in the Office Action.

Claim Objections

Claims 1, 3, 4, 6, 30, 31, 33, 52, 57, 99, 100, and 102 were objected to as allegedly containing non-elected subject matter. The present amendment limits the scope of the pending claims, and Applicants submit for the reasons set forth below that the subject matter of the pending claims complies with the written description requirement and is patentable over the prior art. Accordingly, Applicants respectfully request that the objection be withdrawn and the examination extended to encompass the full scope of the amended claims.

Rejection under 35 USC 112

Claims 1, 3, 4, 6, 8, 29-31, 52-54, 57, 99, 100, 102, and 103 were rejected under 35 USC 112, first paragraph, as failing to comply with the written description requirement.

This rejection is respectfully traversed. However, in order to expedite matters and to allow the application to pass to issuance quickly, the claims have been amended.

The specification fully describes the presently claimed invention in such a way as to convey that Applicants had possession of the invention at the time the application was filed. Amended independent claim 1 encompasses a genus of compounds, described in the specification at, for example, paragraphs [0012], [0023], [0049], and [0057]. Compounds of the genus of amended claim 1 may be prepared according to the processes outlined in paragraphs [0076]-[0083] and may be used according to the methods outlined in paragraphs [0084]-[0117]. More specifically, Examples 8, 9, and 11 teach processes for making specific chromatographic materials of the genus of amended claim 1. In addition, amended claim 52 (now presented as an independent claim) encompasses chromatographic materials having specific structures. Examples 1-11 teach processes for making the specific chromatographic materials in amended claim 52. New claim 105 is also fully supported by the disclosure in the specification, at, for example, paragraph [0025] and Example 9. Thus, the specification provides adequate written description and clear guidance for the compounds encompassed by the presently pending claims.

The Office Action stated that the specification does not teach a support in which all of a, b, a', c, d, a'', b', a''', and d' are zero. Applicants respectfully note that the claimed chromatographic material requires not only a terminal binding functionality but also a hydrophobic linker comprising at least one functionality that is different from the terminal binding functionality. If all of a, b, a', c, d, a'', b', a''', and d' were zero, the resulting material would not include a hydrophobic linker comprising at least one functionality that is different from the terminal binding functionality. Nonetheless, Applicants have amended the claims in such a way that all of a, b, a', c, d, a'', b', a''', and d' cannot be zero. The amended scope of the claims is clearly supported by the written description in the specification. Accordingly, Applicants respectfully request that the rejection be withdrawn.

Rejection under 35 USC 102(b)

Claims 1, 3, 4, 29-31, 53, 54, 99, and 100 were rejected under 35 USC 102(b) as anticipated by WO 92/16292 to Lihme et al. (hereinafter, "Lihme et al.").

This rejection is respectfully traversed.

Independent claim 1 has been amended to require that a is 3 and b and b' are both 0. Lihme et al. fails to teach the chromatographic material according to amended claim 1. Lihme et al. merely teaches thiophilic adsorption matrices comprising a hydrophilic polymer network to which divinyl sulphone groups are bound (p. 7, ll. 33-36). Divinyl sulphone has the structure $\text{CH}_2=\text{CH}-\text{SO}_2-\text{CH}=\text{CH}_2$, which forms a divinyl sulphone activated hydrophilic matrix of the structure M-O-CH₂-CH₂-SO₂-CH=CH₂ (p. 3, ll. 8-12). According to the Office Action, the chromatographic material of Lihme et al. may read on a compound of formula (I) in which a is 2; b is 1; and het is SO₂. These variables are all inconsistent with amended claim 1, in which a is 3 and b is 0, so het does not exist. The claims depending from claim 1, including new claim 105, also require that a is 3 and b is 0. In addition, Applicants respectfully note that claims 52, 102, and 103 were not rejected over Lihme et al. and that all of these claims require (both now and at the time of the January 24, 2011 Office Action) that a is 3 and b is 0, as well. Accordingly, Lihme et al. does not teach all the limitations of the pending claims, and the anticipation rejection should be withdrawn.

Rejection under 35 USC 103

Claims 6, 8, and 57 were rejected under 35 USC 103(a) as unpatentable over Lihme et al. in view of Gemeiner et al. *Journal of Chromatography B*, 715 (1998) 245-271 (hereinafter, "Gemeiner et al.").

This rejection is respectfully traversed.

Claims 6 and 8 have been canceled, rendering the rejection with regard to them moot. Claim 57 relates to a chromatographic material according to claim 1. Thus, the chromatographic material of claim 57 requires that a is 3 and b and b' are both 0. As discussed above, Lihme et al. does not teach or suggest chromatographic materials in which a is 3 and b and b' are both 0. More specifically, Lihme et al. does not teach or suggest

chromatographic materials including a $\overset{(R_3)X}{\underset{|}{\text{--}}(CR_1R_2)_3\text{--}}(NR_4)\text{--}\overset{\text{--}}{\underset{|}{\text{--}}}$ moiety and lacking an SO₂ moiety. Rather, Lihme et al. teaches materials in which a is 2, b is 1, and het is SO₂, specifically, materials based on divinyl sulphone. Thus, the materials in Lihme et al. are structurally distinct from those of claim 57, and, in fact, from those of all the other pending claims. One of skill in the art would not expect the chromatographic materials of Lihme et al. to have similar properties to those of claim 57 or any of the other pending claims.

Gemeiner et al. fails to remedy the deficiencies of Lihme et al. Gemeiner et al. discloses affinity sorbents based on cellulose materials as a support (abstract). Gemeiner et al. does not, however, teach or suggest a chromatographic material according to the pending claims. Rather, Gemeiner et al. focuses primarily on the properties of the cellulose support, more than on particular ligands attached to the support. In fact, the Office Action relied on Gemeiner et al. for its teaching of cellulose beads, not for any teaching of structures of chromatographic materials.

Assuming, *arguendo*, that one of skill in the art attempted to combine Lihme et al.'s teachings of materials based on divinyl sulphone with Gemeiner et al.'s teachings of affinity sorbents based on cellulose materials as a support, the combination would not produce the present invention. Combining these references, one of skill in the art would be led to prepare a divinyl sulphone-based adsorption matrix on a cellulose support, rather than a chromatographic material in which a is 3 and b and b' are both 0, as in claim 57. Accordingly, the combination of Lihme et al. and Gemeiner et al. does not suggest the invention of claim 57.

For the reasons set forth above, reconsideration of the rejections is respectfully requested.

Conclusion

If, in the opinion of the Examiner, a telephone conference would expedite the prosecution of the subject application, the Examiner is invited to call the undersigned attorney.

Respectfully submitted,



Jeremy M. Jay, Reg. No. 33587

LEYDIG, VOIT & MAYER

700 Thirteenth Street, N.W., Suite 300

Washington, DC 20005-3960

(202) 737-6770 (telephone)

(202) 737-6776 (facsimile)

Date: 15 Mar. 2011

JMJ/EMC